

ACCOUNT
OF
A HORN DEVELOPED FROM THE HUMAN
SKIN ;

WITH OBSERVATIONS ON THE PATHOLOGY OF CERTAIN
DISORDERS OF THE SEBACEOUS GLANDS.

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IN the course of some observations lately made with a view to determine the seat of disease in certain affections of the sebaceous organs, I became acquainted with some interesting phenomena in relation to the production of the sebaceous secretion. I found, that which might *à priori* have been imagined, that the secretion varied in its qualities in different individuals ; but I was unprepared for the revelation of the fact, that several modifications of disorder of the sebaceous organs were attributable to this alteration alone. To explain the views which I have been led to form on this subject, I shall describe briefly the mode of production of the sebaceous secretion, its microscopic appearances, some instances of abnormal secretion, and finally the process of formation of abnormal horny tissue,

illustrating the latter with the detail of a case of human horn which recently fell under my notice.

The sebaceous substance is secreted from the blood, through the agency of the cells which compose the epithelial lining of the gland, as is the case probably with all the secretions of the body ; but there is this difference between the sebaceous and other secretions, namely, that the former is semi-solid, while the rest are fluid ; the solidity or density of the sebaceous matter being due to the great number of empty and more or less distended cells which compose its mass. The sebaceous cells are developed in the same manner with epithelial cells in other situations, from a cyto-blastema in which the young cells appear. The contents of the cells vary at different periods of their growth ; the young cells contain a homogeneous and limpid fluid, which becomes flocculent from coagulation as growth proceeds, and finally granulous ; while in the perfect cells, minute oil-globules in greater or less numbers may be perceived. The function of the cell, from its earliest period of existence to full maturity, is one of imbibition from the blood of albuminous, oleaginous, and saline elements combined and in solution ; towards maturity these elements separate from each other, and may be detected as granular matter and oil-globules ; but when maturity is completed, the function of the cell is reversed, an outgoing or transuding current is established, and its contents become dispersed between the cells, and in the excretory cavity of the gland. At the close of this process

the cells are more or less emptied of their contents, and many of them are flaccid and flattened.

From the above description it will be apparent, and the fact may be demonstrated by the microscope, that the sebaceous substance is composed of cytoblasts and cells at every stage of development, of emptied and broken epithelial cells, of oil-globules of various magnitude, of crystals of stearine, of pigment granules, of granules of albuminous matter, of salts which crystallize on desiccation of the secretion, and of more or less of albuminous fluid mingled with the other constituents, and bestowing, with the oil-globules, softness on the mass. The quantity of the sebaceous matter varies in different individuals as to its density and apparent composition. In persons who possess an actively secreting skin, the quantity of sebaceous substance is considerable; it is soft, homogeneous, and contains numerous full and empty cells. But in those in whom the skin is torpid, the secretion is dense; it consists of masses which are modelled on the hairs contained in the follicles, or on the walls of the tubuli of the glands, and the majority of the cells are flattened and condensed into a membranous structure. It is well known that the follicles which contain the sebaceous substance are at the same time the follicles of the minute downy hairs which are produced on every part of the body, with the exception of the palms of the hands and the soles of the feet, and the influence which the state of the sebaceous substance exerts on the destiny of the downy hairs is interesting and

curious. Many of these hairs never rise above the level of the skin, but, as soon as they have reached the mouth of the follicle, are shed by their formative pulp, and become mingled with the sebaceous substance. When the function of the skin is active, the sebaceous substance is gradually expelled from its follicle, and at the same time the fallen hair; but if the skin be torpid, and the sebaceous substance dense and dry, the hair will be retained, and with it many others which have grown to their usual length, and have been cast like the first. Imprisoned in this manner, I have frequently seen twenty or thirty minute but perfect hairs collected into a bundle, and enclosed in inspissated sebaceous substance; and Dr. Simon of Berlin, who was the first to make this observation, relates that he has sometimes remarked forty such hairs.*

It is but natural to expect that the contents of the cells of the sebaceous substance should undergo a change, in accordance with the state of health of the skin, or of the individual, and perhaps also in conformity with the chemical constitution of the blood. I shall allude in this place to two only of these changes. The first is that which occurs in the disease called *molluscum contagiosum*, a disease consisting in the development upon the skin, of small sebaceous tumours in variable numbers. In this affection the tumour results from the solidity of the contents of the cells of the sebaceous secre-

* In sheep, sebaceous tumours are sometimes met with, which are completely filled with wool.

tion, the solidity being so great as to preserve the form of the distended cells, and consequently to dilate the follicle with the ducts of the sebaceous glands. There is, besides, a deficiency of oil-globules and of albuminous fluid, and consequently the impacted substance is dense and dry. The contents of the cells in this disease are chiefly coagulated albumen in a granular form. The second modification in the constituents of the sebaceous cells, is that which was described by my friend Mr. Dalrymple, in a paper read before the Society at the close of the last session, and published in the Society's Transactions. In Mr. Dalrymple's case the sebaceous cells were flattened, having the ordinary appearance of epithelial scales, and contained phosphate and carbonate of lime in their interior. I do not agree with Mr. Dalrymple in considering the calcareous matter in this case "a totally new substance," "found in tissues where *à priori* we should have been most unprepared to expect it;" for the sebaceous secretion always contains alkaline salts and salts of lime, and in his case the transudation of the other constituents of the sebaceous cells with the detention of the earthy salts, the latter being in excess, would give the pathological state required. It is not unlikely that the cases described by Meckel, Voigtel,* and Vogel,† were of the pathological nature described by Mr.

* Handbuch der Pathologischen Anatomie.

† Allgemeine Zeitung für Chirurgie, innere Heilkunde. July, 1841.

Dalrymple. In Vogel's case there were one hundred and fifty small tumours, dispersed over the scrotum, and on chemical analysis they were found to be composed of carbonate and phosphate of lime, with a trace of soda, a small quantity of fat, and some extractive matter.

I now turn to another pathological state consequent on imperfect secretion of the sebaceous substance. It is that in which, from the torpid action of the skin, or from the nature of the contents of the cells, or from both causes acting together, the sebaceous substance collects within the follicle, becomes impacted, and acquires an abnormal degree of density. In this situation the impacted mass exerts so great an amount of pressure on the vascular walls of the follicle, as to abrogate its special function, and the peculiar elements of the sebaceous secretion cease to be produced. The formation of epithelium, however, still continues, and layer after layer of epithelial scales are developed, until the mass acquires considerable size. Tumours of this kind, from the nature of the position of the sebaceous follicle, namely, within the corium, rarely acquire a large size as compared with tumours in other situations. They are prevented from pressing inwards by the deep stratum of the corium; the same structure opposes their increase outwardly or laterally. Nevertheless, I have seen a tumour of this kind which measured three quarters of an inch in diameter, but not more than a quarter of an inch in thickness. The aperture of the follicle remains

open, and is more or less distended in proportion to the extent of the tumour; but from the nature of the collection, there is no tendency to its escape. I have called such tumours *sebaceous accumulations*. Certain minute tumours, commonly met with in clusters around and upon the eyelids, *sebaceous miliary tubercles*, are of the same pathological nature with the sebaceous accumulations, but in these the excretory follicle is closed.

The peculiar pathological character of the tumours just described is their laminated texture, and the identity of structure of their contents with epidermis, most, if not all, of the peculiar constituents of sebaceous substance being absent. In the preparations and figures before the Society, this peculiarity of structure is shown, as are the precise seat of the tumour, and the thinness of the walls of the dilated follicle.* Mr. Dalrymple remarked, in his case, upon the concentrically laminated disposition of the contents of the little tumour.

If now, in the cases above recited, we imagine the upper wall of the laminated tumour to be removed, and the accumulated substance exposed to the influence of the atmosphere, any moisture retained by the epithelial laminæ would soon become dissipated, and the whole mass would acquire the consistence and hardness of epidermis of equal thickness; in other words, it would be converted into horn.

Such a case as that which I am now supposing

* See Plate II. at the end of the volume.

does sometimes in reality occur. The aperture of the follicle acquires an unusual degree of dilatation, and some of the hardened contents of the tumour are pressed through the opening. By the addition of fresh layers from below, (the formative power having increased by the removal of superficial pressure,) the indurated mass is still further forced outwards, dilating the aperture as with a wedge, and finally increasing its size to that of the entire base of the hypertrophied follicle. The process of formation of new epithelial layers by the walls of the follicle (now become the base of the mass) will go on, unless interrupted by surgical means, for years, and in this manner those singular bodies, of which so many remarkable examples are on record, *horns*, are produced.

A well-marked instance of *horn*, of which I shall now proceed to give an account, was shown to me by my friend Mr. Barklmore, of Charlotte-street, Bloomsbury-square, during the month of October of the present year (1843). The patient was an old female servant in that gentleman's family; she was fifty-seven years of age, and gave the following history of her case :—At the age of five-and-twenty, on the termination of a severe attack of illness, she observed a small elevation, like a pimple, on the site of the present growth; the pimple increased in size, was somewhat painful, and in about ten years from its first appearance burst, and discharged a quantity of matter resembling “mashed potatoe.” From this moment a cavity always remained, from

the bottom of which some "scurfy" matter could be raised by the finger nail. At the beginning of the current year, the present growth made its appearance in the situation of the cavity, and increasing in size, gave her much pain and uneasiness. The skin around it was red and inflamed, and she applied a poultice, which had the effect, according to her, of making it grow still faster. During the summer she suffered much from the frequent jerks which the growth received from her dress, and from awkward blows which it sustained, and in the month of October she applied to her master for relief. At this period the growth had acquired a considerable size: it was situated on the upper and front part of the thigh, and presented the appearance and characters of horn. It was semi-transparent, yellowish in colour, dense and horny in texture, ribbed on the surface, insensible to the pressure of the nail, and firmly rooted in the skin. In general appearance it resembled the broad and curved beak of a bird, of large size, and had a broad and extensive base. Around the base, the integument arose to the height of several lines, and in two places to fully half-an-inch. The skin was thin and attenuated as though from the effects of stretching, the epidermis being continuous with the surface of the horn, and gave the idea of a degeneration of the integument into the horny structure.

On the 12th of October, I proceeded, with the aid of Mr. Barklimore, to remove the horn, by cutting through the integument, around its base,

and dissecting it from the subcutaneous tissue. The removal was speedily and easily accomplished, since the growth was limited inferiorly by the under surface of the corium. The wound made little progress during the first fortnight, and was indisposed to form granulations, a circumstance I had been prepared to anticipate from the elderly and infirm appearance of the patient, the looseness of the integument, and the inferior vascularity of the fibro-cellular and adipose tissues composing the superficial fascia; but as soon as granulations did appear, the process of cure went on rapidly, and by the fifth week the sore was entirely healed.

I have had occasion to make this remark before, in the healing of wounds in old persons after operations, namely, that the action, which is slow in being excited to commence the reparative process, is inapt to rise to a point that might interfere with its progress when once established. In the present case, although one small artery only required ligature, there was an oozing of blood all the night through; for several days the surface presented the appearance of a newly-made wound, nor was any trace of lymph perceptible until after that time. The suppurative process was very deficient during the whole period of cure.

On examining the horn after removal, I found its base to be formed by the deep stratum of the corium, so that it was obviously a cutaneous formation. The base was oval in shape, and measured in its long diameter one inch and a half, and in the

opposite direction one inch and a quarter. The horn was two inches and three quarters in length, by two inches in greatest breadth, and its elevation above the surface was one inch and a quarter. The latter measurement was that of the vertical thickness of the horn ; for in consequence of its mode of growth, its long diameter lay parallel with the surface of the skin. The sebaceous accumulation must originally have formed a prominent tumour, from the side of which the protrusion took place ; the thin integument covering the other half still retaining its elevation from distension. Traces of this mode of formation are still apparent upon the surface of the horn. Subsequently, the thin integument has become inflamed and ulcerated, and, receiving no granulations from beneath, has desiccated upon its horny contents. This ulceration was the cause of the redness and pain of which the patient complained, and its extent is marked upon the horn, by a rough, discoloured surface of a circular figure, surrounded for more than two-thirds of its extent by a margin of thinned integument. The weight of the horn was six drachms.

The section of the growth presents all the characters of horn ; it is laminated longitudinally, the laminæ being distinctly traced by their difference of tint from the base to the apex of the horn. At the apex, moreover, it is split in the direction of its laminæ, and several external lamellæ are partly separated from those beneath.

In minute structure it is composed of flattened

epithelial cells, closely condensed, and in some parts having a fibrous arrangement. The epithelial scales are somewhat larger than those of the epidermis, and possess nuclei; a circumstance which confirms the analogy between the inflected follicles of the skin, and those larger inflections lined by mucous membrane. The flattened cells measured in long diameter from $\frac{1}{700}$ to $\frac{1}{300}$ of an inch; and in the short diameter from $\frac{1}{1000}$ to $\frac{1}{350}$; the average of these measurements being $\frac{1}{500}$ for the long, and $\frac{1}{850}$ for the short diameter. The nuclei are for the most part oval in shape, the long diameter measuring $\frac{1}{2500}$, and the short $\frac{1}{3300}$ of an inch. Epidermic cells, according to my observations, have an average admeasurement of $\frac{1}{800}$ by $\frac{1}{800}$; and the epithelial cells of the mouth $\frac{1}{300}$ by $\frac{1}{400}$ of an inch. The nuclei of the latter measured $\frac{1}{2000}$ of an inch. (See Plate II.)

I made no chemical analysis of the horn in the present case, but this has been done repeatedly on the continent. M. Dublanc has published an analysis of human horn in the "Journal de Pharmacie,"* and another analysis† was made of a horn which is deposited in the Dupuytren Museum. Both analyses go to show that horn is chiefly composed of albumen, a small quantity of mucus, phosphate of lime and chloride of sodium, and a trace of lactate of soda.

The subject of horns in the human person very

* March, 1830.

† Cruveilhier, Anatomie Pathologique, liv. 24, vol. 2; and Jour. de Méd. Prat. de Bordeaux. 1835.

early attracted the attention of observers, and their occurrence seems to have been more frequent among our forefathers than at the present day. This circumstance may be explained by referring to the improvement which has of late years been made in surgery, and to the more general diffusion of a knowledge of its elementary principles. Upon a recent occasion, namely, the presentation of a paper to the Royal Academy of Medicine of France, by M. Lozes, the committee appointed to inquire into this subject collected seventy-one observations of horny growths from the skin, of which, thirty-seven were met with in females, thirty-one in males, and three in infants. Of this number, fifteen were seated on the head, eight on the face, eighteen on the lower extremities, eight on the trunk, and three on the glans penis.*

In pursuing this inquiry, I have succeeded in collecting ninety cases, of which forty-four were females, and thirty-nine males; of the remainder the sex is not mentioned. Of this number, forty-eight were seated on the head, four on the face, four on the nose, eleven on the thigh, three on the leg and foot, six on the back, five on the glans penis, and nine on the trunk of the body. The greater frequency of this disorder among females than males is admitted by all authors, but this fact is most conspicuously shown in the instance of the thigh and of the head; for example, of the eleven cases of horny growth from the thigh, two only were

* Mémoires de l'Académie Royale de Médecine. Juin 1830.

males; and of the forty-eight affecting the head, twenty-seven occurred in females, and nineteen in males; in the remaining two, the sex being unmentioned. That old age is a predisposing cause of this affection, is proved by the greater frequency of its occurrence in elderly persons; thus, of the forty-eight cases in which the scalp was the seat of the growth, thirty-eight were above the mid-period of life; several were over seventy, and one was ninety-seven;* three were young persons,† and three were infants.‡

Cruveilhier, in remarking upon the relative frequency of these growths on different parts of the skin, states that they occur on the posterior and inner part of the thighs, as often as on all the other regions of the body taken together, a circumstance which he attributes to the general use of the chaufferette. But Cruveilhier's statement is not borne out by facts, and numerical data are, as we have seen above, opposed to his opinion. Moreover he confounds horns with warts and corns, and regards them as the result of cutaneous irritation and enlarged papillæ, with increased secretion of epidermis.§

* Gastellier. *Hist. de la Soc. Roy. de Méd.* vol. i. p. 311. 1776.

† Aldrovandus et Bartholinus.

‡ Amatus, *Cent. 1. Cur. 1.* Zacutus Lusitanus, *Prax. Med. Adm. lib. iii. obs. 83.* Joseph Lanzoni, *Nat. Cur. Ephem. Germ. ann. 4. 1673.*

§ Loc. citat.

Several authors have mentioned the development of horny growths from old encysted tumours, and have remarked upon their frequent association with such tumours. Sir Everard Home* was particularly struck by this circumstance ; it was present in all the cases which he examined, but he fails in accounting for the horny secretion, which he regards as an imperfect substitute for epidermis. Thomas Bartholin, who collected several cases of human horns, speaks of the origin of one from an encysted tumour,† and Soemmering,‡ Gastellier,§ and Cal-dani,|| notice the same fact.

Some curious speculations were excited in the minds of the older physicians by the observation of cases of horny growths. Thus, Rhodius¶ met with a Benedictine Monk who had a pair of horns, and was addicted to rumination, and Fabricius,** having seen a man with a horn growing from his forehead, whose son ruminated, is willing to give the father the credit of transmitting this disposition to the son, by virtue of the ruminant character which he bore so obviously upon his head.

The most remarkable case of human horn on record, is that of a Mexican porter named Paul Rod-

* Philosophical Transactions, vol. 81, p. 95, 1791.

† Epistolis.

‡ Archives Générales de Méd. vol. 13, 1827.

§ Loco citato.

|| Dict. de Méd. ; Art. Cornée.

¶ Bartholinus, de unicorn. aphor.

** De ventriculo. Also, Bartholinus, de unicorn. aphor.

riguez.* The horn was situated upon the upper and lateral part of the head, it was fourteen inches in circumference around its shaft, and it divided above this point into three branches. Voigtel† cites the case of an old woman who had a horn with three branches growing from her forehead, and M. Dubois‡ had a woman under his care, in the Hospice de Perfectionnement, with a horn that measured seven or eight inches in diameter at its base, and was six inches in length. The length of the horn in some recorded instances is also remarkable. Sir Everard Home§ saw two cases, in both of which the growth measured five inches by one inch in diameter. They were curled and had the appearance of isinglass. In one case the horn was fourteen years growing. Dr. Gregory|| mentions a horn which was removed from the temple of a woman in Edinburgh which measured seven inches. Dr. Chariere,¶ of Barnstaple, saw one growing from the nape of a woman's neck which measured seven inches. A horn in the British Museum is said to measure eleven inches in length by two-and-a-half in circumference,** and Bartholin,†† Faget, and several other writers, have spoken of horns twelve inches long. A singular instance of horn is mentioned by Cruveilhier in his "Anatomie Pathologique," as falling

* New York Medical Repository for 1820.

† Handbuch citat.

‡ Dictionnaire de Médecine; Art. Cornée.

§ Loco citato.

|| Sir E. Home's paper; loco citato.

¶ Eodem loco.

** Eodem loco.

†† Epistolis.

under the notice of Dr. Faget of Bordeaux. The subject was a Mexican Indian, and the horn was situated in the lumbar region on the left side. After growing for three years, it had attained a length of four inches by seven or eight inches in circumference, and was sawn off by the patient's son ; after another three years it was submitted to a similar operation, and, at the end of nine or ten years from its first appearance, was extirpated by M. Faget. The portion removed by M. Faget, with the two portions previously cut off, amounted in length to about twelve inches.

In a scarce tract in small quarto, published in 1676, there is "a brief narrative of a strange and wonderful old woman that had a pair of horns growing upon her head." "This strange and stupendous effect," continues the pamphlet, "began first from a soreness" of the back part of the head where the horns grew. "This soreness continued twenty years, in which time it miserably afflicted this good woman, and ripened gradually into a wen near the bigness of a large hen egg, which continued for the space of five years, more sadly tormenting her than before, after which time it was, by a strange operation of nature, changed into horns, which are in show and substance much like ram's horn, solid and wrinkled, but sadly grieving the old woman, especially upon the change of weather." The horns were shed four times, the first "grew long, but as slender as an oaten straw ;" the second was thicker, and, on the fall of the latter, two were produced, which were broken off by accident. One of these

was presented to the King of France, the other is stated to have been nine inches long, and two inches in circumference. The periods of shedding were three, four, and four-years-and-a-half. There is an engraving of this woman in Dr. Charles Leigh's *Natural History of Lancashire, Cheshire, and the Peak of Derbyshire*. Her portrait and one of the horns is in the Ashmolean Museum, and another of the horns in the British Museum.

I have not ventured to name the numerous writers who have recorded individual cases of horn ; and I shall now conclude by referring to the names of those who have devoted attention to the subject in general. Bartholinus and Borellus have each collected numerous cases. Vicq d'Azyr* treats of the subject in his essay on "Animal Concretions" in 1780 ; Franc,† in an essay "de Cornutis," in Heidelberg ; Sir Everard Home, in the *Philosophical Transactions* for 1791 ; Alibert, in his "*Précis Théorique et Pratique des Maladies de la Peau* ;" Rudolphi,‡ in a paper read before the Academy of Sciences of Berlin, in 1815 ; Dauxais, in a thesis, published in Paris in 1820 ; Breschet, in the article "Cornée," in the *Dictionnaire de Médecine* ; Cruveilhier, in his "*Anatomie Pathologique*." The latter author devotes the whole of his twenty-fourth fasciculus to horny growths. And Sir Astley Cooper and Mr. Travers, in their *Surgical Essays*.§

* Hist. de la Soc. Roy. de Méd. p. 184. 1780-81.

† Tract. Philolog. Med. de Cornutis.

‡ Vol 2.

§ Part 2.

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